REMARKS

Claims 7 and 21 have been amended to clarify the claim language. Support for amended Claims 7 and 21 can be found in the Specification and claims as filed, for example on page 8, lines 9 through page 10, line 6 and page 11, line 24-page 13, line 17. No new matter has been added herewith. The changes made to the claims by the current amendment, including ~~deletions~~ and additions, are shown herein with deletions designated with a strikethrough and additions underlined.

Rejection under 35 U.S.C.§112, first paragraph

The Examiner rejected Claims 7-9 and 21 under 35 U.S.C. §112, first paragraph for lack of enablement. The Examiner stated that the Specification as filed failed to present any information regarding a relationship between the levels of IRP-2 in a sample of peripheral blood cells, wherein more probe interacts with IRP-2 in an AD or MCI patient than a control. And further that the method of "identifying a subject as likely to develop AD or MCI" was not enabled.

As stated by the Examiner, the factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art and, (8) the breadth of the claims. In re Wands, 8 USPQ2d, 1400 (CAFC 1988).

(1) With reference to the quantity of experimentation necessary to carry out the method, Applicants submit that with the teaching in the specification and the knowledge of one of skill in the art, a minimal amount of experimentation would be necessary. One of skill in the art knows that the quantitation depends on the type of assay and the sensitivity of the assay which is used. For example, in the case of an ELISA assay, the sensitivity is high, so the difference between a control and an MCI or Alzheimer's sample would be more easy to identify. While when using a less sensitive test, such as a western blot or FACS analysis, the difference between the control and sample would be less obvious.

(2) The amount of direction and/or guidance presented is sufficient to provide one of skill in the art with the tools to perform the method and to analyze the results. The skilled artisan is someone who is highly skilled in the methods and analysis necessary to perform these assays.

(3) The presence or absence of working examples. Although there are no specific working examples provided in the specification, there is no necessity that such examples be provided. Further, the Declarations by Dr. Wolff Kirsch provide examples which show that using the methods and teaching of the Specification, one of skill in the art could perform the method without specific working examples.

(4) The nature of the invention is an assay which demonstrates a novel correlation between a protein (IRP-2) and a disease (MCI and Alzheimer's disease). The mechanics of setting up an assay to determine IRP-2 levels is something that can be easily performed by the skilled artisan. With reference to a subject being likely to develop MCI or AD, it is known to those of skill in the art that because the only sure way to diagnose MCI or AD is with the use of post-mortem tissue. Even when post-mortem tissue is available, the symptoms are used as guidance as to what abnormalities to look for. Thus, it would be clear to one of skill in the art that in addition to the results of the claimed diagnostic test for IRP-2, symptomology and neurologic tests.

(5) The prior art did not anticipate the correlation found herein. However, there is extensive prior art available on how to set up an assay to quantitate the levels of a protein in a sample.

(6) The person skilled in the art in the field of biotechnology typically has a considerable amount of expertise since they are typically a person with at least 2 years experience in addition to a baccalaureate degree or with at least a masters degree and usually having a Ph.D. Thus, the skilled artisan is highly skilled.

(7) The predictability in the field of biological assays is high since methods such as PCR, ELISA, FACS analysis and hybridization have been performed for decades.

(8) The claims are specific to the levels of IRP-2 and mutant protein. Thus, the breadth of the claims is in keeping with the teaching in the specification.

In view of this, Claims 7-9 are enabled by the specification.

With regard to Claim 21, the Examiner states that there are no working examples showing that mutations in the IRP-2 gene or different expression of IRP-2 can be used to

diagnose diseases associated with "a defect in iron metabolism" because the art does not recognize IRP-2 as being exclusively associated with iron metabolism. However, as one of skill in the art knows, it is not necessary for IRP-2 to be exclusively associated with iron metabolism. To be useful as a diagnostic, the identification of a higher than normal amount of IRP-2 is used in addition to other factors to identify its usefulness. For example, the identification of other symptoms or tests that are associated with defects in iron metabolism may be used in addition to the claimed test. Further, there is extensive support in the specification for the correlation of IRP-2 with iron metabolism and the claimed method, including page 2, lines 3-10, on page 56, lines 15-20 for the correlation between brain disorder and iron metabolism, on page 34, lines 19-page 35, line 9 for the diagnostic method, and on page 42, lines 3-12 for the detection.

In view of the above amendments, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. 112, first paragraph.

Rejection under 35 U.S.C.§112, second paragraph

The Examiner rejected Claims 7-9 and 21 under 35 U.S.C.§112, second paragraph as being indefinite for the following reasons:

Claims 7 and 21 were believed vague for recitation of a "mutant IRP-2". The claim has been amended to recite: "a mutant IRP-2, wherein said mutant IRP-2 comprises one or more mutations in SEQ ID NO:18". Because one of skill in the art with the teaching in the specification could determine what a mutant IRP-2 protein is, Applicants respectfully request withdrawal of this rejection.

Claims 7 and 21 were believed vague as to the recitation of "protein" because the Examiner believes there is insufficient antecedent basis. Further the claim is believed indefinite as to the recitation of "a probe which interacts with wild-type or mutant IRP-2". The Examiner believes it is unclear whether the probe interacts with only wild-type, only mutant, or both. The claims have been amended to clarify which protein is being referred to and to show that the probe may interact with one or both of wildtype and mutant IRP-2.

Claims 7 and 21 are believed indefinite for omitting essential steps, such as "measuring the amount of probe detected after contacting the sample with the probe". However, Claims 7 and 21 have been amended to recite "measuring the amount of probe detected after contacting the sample with the probe".

In view of the above amendments, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. 112, second paragraph.

Clarification of the Record

For the record, Applicant wishes to point out that the data shown in Table 1 submitted in the Declaration submitted by Wolff Kirsch along with the previous response was taken from Table 1 of the specification of co-pending continuation-in-part Application No. 10/698,058 at page 99. The Table in the continuation-in-part application includes additional data not shown in the Declaration.

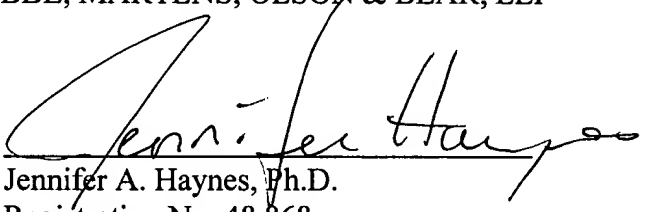
Conclusion

In view of Applicants' amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should there be any questions concerning the above application, the Examiner is respectfully requested to contact the undersigned at the telephone number appearing below. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: October 20, 2004

By: 

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